

## Bi-Directional Triode Thyristor

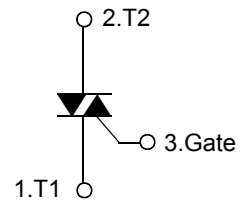
### Features

- ◆ Repetitive Peak Off-State Voltage : 600V
- ◆ R.M.S On-State Current (  $I_{T(RMS)}$  ) = 6 A )
- ◆ High Commutation dv/dt
- ◆ Non-isolated Type

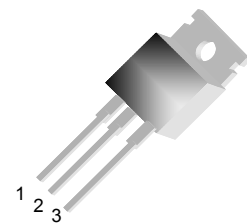
### General Description

This device is suitable for AC switching application, phase control application such as fan speed and temperature modulation control, lighting control and static switching relay.

Symbol



TO-220



### Absolute Maximum Ratings ( $T_J = 25^{\circ}\text{C}$ unless otherwise specified )

Symbol	Parameter	Condition	Ratings	Units
$V_{DRM}$	Repetitive Peak Off-State Voltage		600	V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 100^{\circ}\text{C}$	6.0	A
$I_{TSM}$	Surge On-State Current	One Cycle, 50Hz/60Hz, Peak, Non-Repetitive	60/66	A
$I^2_t$	$I^2_t$		18	$\text{A}^2\text{s}$
$P_{GM}$	Peak Gate Power Dissipation		3.0	W
$P_{G(AV)}$	Average Gate Power Dissipation		0.3	W
$I_{GM}$	Peak Gate Current		2.0	A
$V_{GM}$	Peak Gate Voltage		10	V
$T_J$	Operating Junction Temperature		- 40 ~ 125	$^{\circ}\text{C}$
$T_{STG}$	Storage Temperature		- 40 ~ 150	$^{\circ}\text{C}$
	Mass		2.0	g

# STP6A60

## Electrical Characteristics

Symbol	Items		Conditions	Ratings			Unit
				Min.	Typ.	Max.	
I <sub>DRM</sub>	Repetitive Peak Off-State Current		V <sub>D</sub> = V <sub>DRM</sub> , Single Phase, Half Wave T <sub>J</sub> = 125 °C	—	—	1.0	mA
V <sub>TM</sub>	Peak On-State Voltage		I <sub>T</sub> = 8 A, Inst. Measurement	—	—	1.5	V
I <sup>+</sup> <sub>GT1</sub>	I	Gate Trigger Current	V <sub>D</sub> = 6 V, R <sub>L</sub> =10 Ω	—	—	20	mA
I <sup>-</sup> <sub>GT1</sub>	II			—	—	20	
I <sup>-</sup> <sub>GT3</sub>	III			—	—	20	
V <sup>+</sup> <sub>GT1</sub>	I	Gate Trigger Voltage	V <sub>D</sub> = 6 V, R <sub>L</sub> =10 Ω	—	—	1.5	V
V <sub>GT1</sub> <sup>-</sup>	II			—	—	1.5	
V <sub>GT3</sub>	III			—	—	1.5	
V <sub>GD</sub>	Non-Trigger Gate Voltage		T <sub>J</sub> = 125 °C, V <sub>D</sub> = 1/2 V <sub>DRM</sub>	0.2	—	—	V
(dv/dt) <sub>c</sub>	Critical Rate of Rise Off-State Voltage at Commutation		T <sub>J</sub> = 125 °C, [di/dt] <sub>c</sub> = -3.0 A/ms, V <sub>D</sub> =2/3 V <sub>DRM</sub>	5.0	—	—	V/μs
I <sub>H</sub>	Holding Current			—	10	—	mA
R <sub>th(j-c)</sub>	Thermal Impedance		Junction to case	—	—	2.8	°C/W

Fig 1. Gate Characteristics

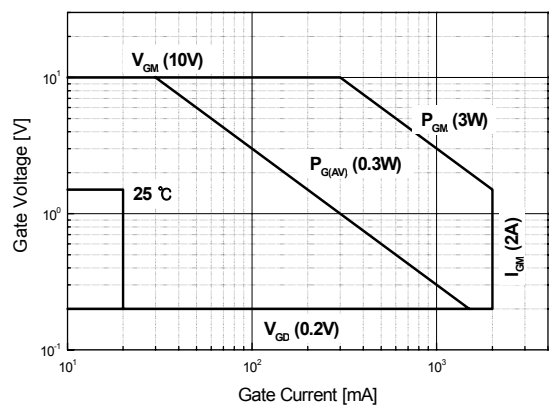


Fig 2. On-State Voltage

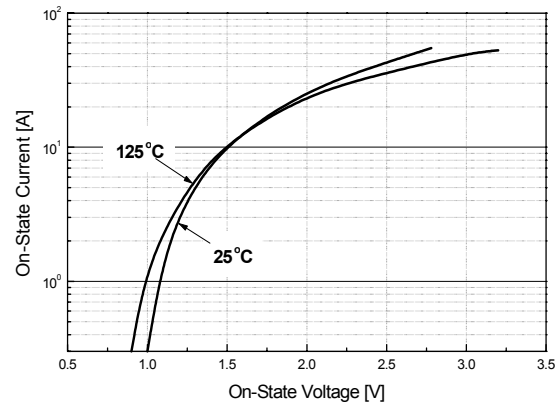


Fig 3. On State Current vs. Maximum Power Dissipation

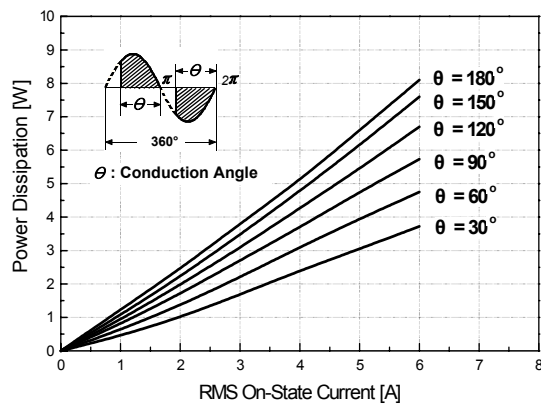


Fig 4. On State Current vs. Allowable Case Temperature

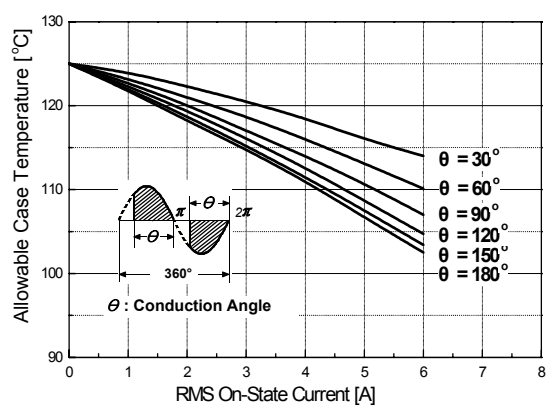


Fig 5. Surge On-State Current Rating ( Non-Repetitive )

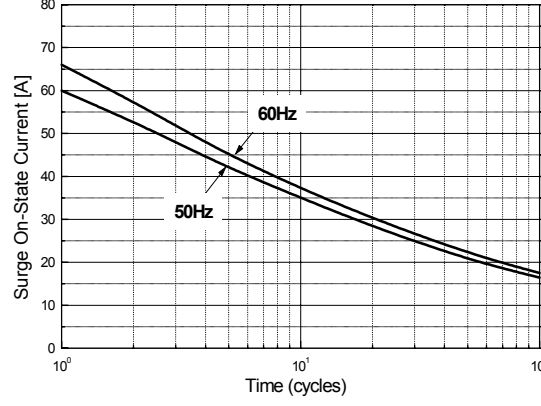
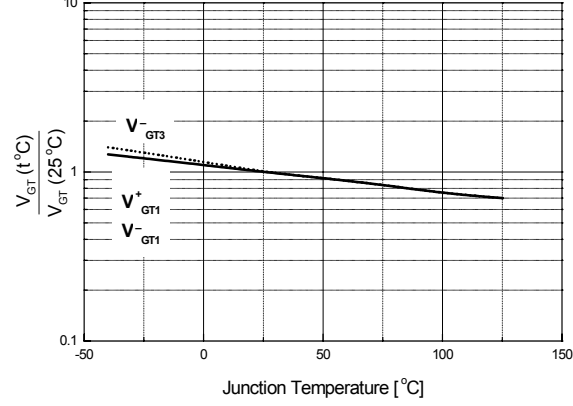


Fig 6. Gate Trigger Voltage vs. Junction Temperature



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Fig 7. Gate Trigger Current vs. Junction Temperature

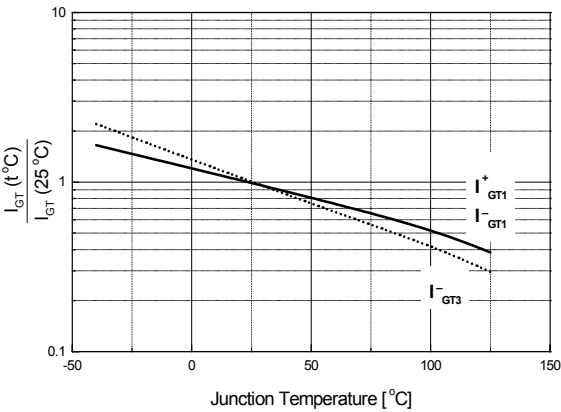


Fig 8. Transient Thermal Impedance

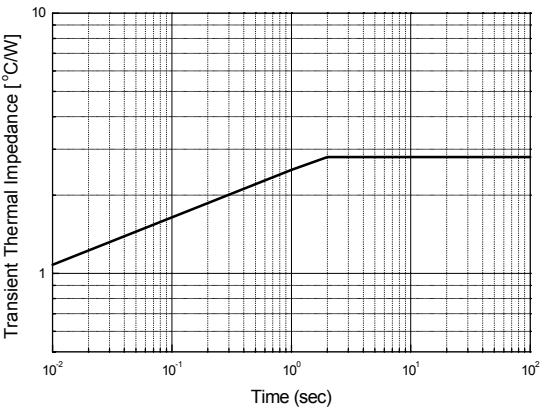
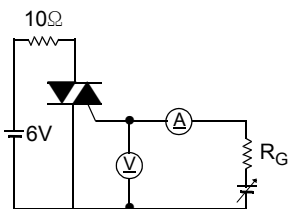
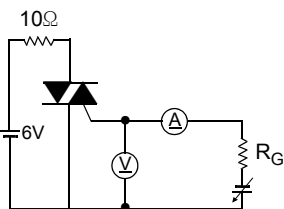


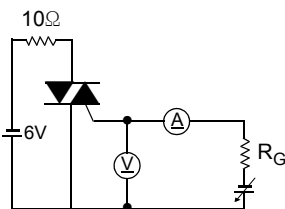
Fig 9. Gate Trigger Characteristics Test Circuit



Test Procedure I



Test Procedure II



Test Procedure III



TO-220 Package Dimension

Dim.	mm			Inch		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.7		10.1	0.382		0.398
B	6.3		6.7	0.248		0.264
C	9.0		9.47	0.354		0.373
D	12.8		13.3	0.504		0.524
E	1.2		1.4	0.047		0.055
F		1.7			0.067	
G		2.5			0.098	
H	3.0		3.4	0.118		0.134
I	1.25		1.4	0.049		0.055
J	2.4		2.7	0.094		0.106
K	5.0		5.15	0.197		0.203
L	2.2		2.6	0.087		0.102
M	1.25		1.55	0.049		0.061
N	0.45		0.6	0.018		0.024
O	0.6		1.0	0.024		0.039
$\phi$		3.6			0.142	

